

## Patent claims

1. Transducer for a filter operating with surface waves with one acoustic track (AT) in which in the mid frequency of the filter an acoustic surface wave is excitable,

5               whereby the acoustic track (AT) is apportioned in longitudinal direction in cells of different cell types, whereby a cell type is defined by the connection sequence of the electrode fingers of a cell,

              whereby at least some cells are constructed as function cells that fulfill at least one function selected from the exciting and reflection of the acoustic wave,

10               whereby the length of the function cells essentially corresponds to a phase shift of the acoustic wave excited in the mid frequency by  $2\pi n$ ,

              whereby  $n$  is a whole number,

              whereby at least two function cells ( $Z1$ ,  $Z1'$ ) of the same cell type are anticipated,

              whereby the acoustic wave that is excited in the middle frequency in the  
15               transducer, in passing through at least two different circuits, which in each case are measured from the beginning of the function cell of the same cell type to the beginning of the subsequent cell ( $Z2$ ,  $Z3$ ), finds phase shifts  $\varphi$  and  $\varphi'$  which are different from each other.

20               2. Transducer for a filter operating with surface waves with one acoustic track (AT) in which in the mid frequency of the filter an acoustic surface wave is excitable,

whereby the acoustic track (AT) is apportioned in longitudinal direction in cells of different cell types,

whereby a cell type is defined by the connection sequence of the electrode fingers of a cell,

5           whereby at least some cells are constructed as function cells which fulfill at least one function selected from the exciting and reflection of the acoustic wave,

whereby at least two function cells ( $Z1$ ,  $Z1'$ ) are anticipated, which in each case display at least one wide (WF) and at least one narrow (NF) electrode finger,

10           whereby individual distinct reflective strengths in the various function cells of the same cell type are attuned by the following measures: in different function cells of the same cell type, the sums of the relative widths of all narrow electrode fingers with respect to cell length are distinguished by the difference  $+\alpha$ ,

15           whereby at the same time the sums of the relative widths of all wide electrode fingers with respect to cell length are distinguished by a difference of  $-\alpha$ , so that in the different function cells of the same cell type the sum of the relative change of width of all fingers is zero.

3. Transducer according to claim 2, in which the length of the function cells essentially corresponds to a phase shift of the acoustic wave excited in the mid frequency  
20           by  $2\pi n$ ,

whereby  $n$  is a whole number,

whereby the acoustic wave that is excited in the middle frequency in the transducer, in passing through at least two different circuits, which in each case are measured from the beginning of the function cell of the same cell type to the beginning of the subsequent cell (Z2, Z3), finds phase shifts  $\phi$  and  $\phi'$  which are different from each other.

4. Transducer according to one of the claims 1 to 3, in which at least two function cells (Z1, Z1') of the same cell type show the same construction, but is scaled differently in longitudinal direction.

5. Transducer according to claim 4, in which more than only one cell type with differently scaled function cells is anticipated.

6. Transducer according to claim 4 or 5, in which at least two function cells of the same cell type are scaled differently, whereby the difference in scaling amounts to between 0.1% and 20%.

7. Transducer according to claim 1 or 2, in which all electrode fingers of a function cell (Z1, Z1') together form an electrode finger group (FG1, FG1'),  
whereby at least two function cells of the same cell type display identically constructed electrode finger groups (FG1, FG1'),

whereby the respective displacement between the final position electrode finger (10) of a function cell and the electrode finger (11) assigned to this electrode finger of the subsequent cell in another function cell with an identically built electrode finger group is differently selected.

5

8. Transducer according to one of the claims 1 to 7, in which cells are anticipated with the length  $\lambda/2$ , that neither contributes to the reflection no to the exciting of the acoustic wave.

10

9. Transducer according to one of the claims 1 to 7, with which the function cells of the same cell type show four electrode fingers each.

15

10. Transducer according to one of the claims 1 to 8, in which all function cells of a cell type are comprised of three electrode fingers whereby the width of the wider of the electrode fingers essentially amounts to  $3\lambda/8$ , or whereby the width of the wider of the electrode fingers deviates from the value  $3\lambda/8$  by at most 20%.

20

11. Transducer according to one of the claims 1 to 10, with the electrode finger, whose width essentially amounts to  $m\lambda/16$  or at most deviates from this value by  $\pm 20\%$ , whereby  $m$  is a whole number.

12. Transducer according to one of the claims 1 to 11, which is equipped with at least one additional acoustic track (AT), that shows essentially same characteristics as the first named acoustic track, whereby the acoustic tracks are arranged parallel to each and electrically interconnected with each other.